ATOMIC ENERGY newsletter

THE FIRST AND ONLY ATO... SERVICE

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Dear Sir:

As a reflection of the constant acceleration of the atomic energy program of the United States, a supplemental appropriation of $235,000,000,00. for the USAEC has now been requested from Congress through a Presidential request. President Truman, in relaying this USAEC-estimate to Congress, stated that it would be for new plants and equipment "made necessary by recent accelerated technical developments". The monies would be in addition to the regular annual appropriation of $1.2 billion for the 1952 fiscal year, which it is expected will soon be approved by Congress.

Although originally set up to do nuclear research, the activities of the Knolls Atomic Power Laboratory near Schenectady, N.Y. have progressed beyond this original intent, General Electric president Ralph J. Cordiner recently pointed out; the result is that two component divisions have now been established there. G-E, which operates the laboratory under a USAEC-contract, made Kenneth H. Kingdom manager of the technical division, and William H. Milton, Jr., manager of the operating division.

To handle the expanding volume of work brought about by the enlargement of the U. S. atomic energy program, T. F. Farrell, former chariman, New York Housing Authority, has now been made assistant general manager of the USAEC for manufacturing. He will be concerned with getting supplies of uranium and other raw materials; the processing of feed materials for the production plants, at Oak Ridge, Paducah, Hanford and Savannah River; the operation of the production plants; and the construction of new production facilities. USAEC general manager M. W. Boyer, in commenting upon Farrell's appointment, stated that the latter "is known as a master at working rapidly and easily in Federal and State governments---". Farrell, who holds a civil engineering degree, has had experience in various state, government, and army public works activities. He was also connected with the Manhattan Project, World War II predecessor of the U. S. Atomic Energy Commission.

A survey of the uranium mining activities in the western United States, indicates satisfaction by both large and small producers in the mining fraternity with the manner in which the USAEC (which is in complete control of this program) has handled the task. The low grade deposits are widely scattered in relatively small bodies of ore. The USAEC has spent millions of dollars in finding such deposits, and in providing milling facilities, granting special subsidies to overcome the disadvantages of hauling these ores to market, etc. The result is that whereas immediately after World War II there were only two mills producing uranium oxide, there are now seven, all except two privately owned. New discoveries have spread far beyond the confines of the so-called Colorado plateau (referring to the river, not the State), which is the traditional home of the vanadium-radium-uranium industry in the U. S., so that there are now some 40 more or less promising sources of uranium in some 300,000 square miles of the mountain west. So far, none has been of pitchblende, the igneous ore of uranium.

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RAW MATERIALS...for nuclear work...

UNITED STATES-Moab, Utah: Among those active in the uranium-producing belt in this area is Standard Uranium Corp., of New York which recently took over 100 claims in the area, in Taylor and Mineral canyons, tributaries of the Green river, and Shafer basin on the Colorado river...Albuquerque, N.M.: The renewed demand for beryl has brought the Harding mine, near Dixon, to life. Now being shipped are tonnages of non-crystalline beryl; reportedly, the quantities are the largest of any domestic mine.

CANADA- To consolidate several well located claim groups in the Lake Athabaska area where preliminary work has shown uranium-bearing occurrences, Radiore Uranium Mines, Ltd., has now been formed. A full scale exploration program is expected to get under way at an early date. The consolidation represents ground previously held by four companies associated with the Byrne interests. Property holdings fall into the two groups known as the "Con" and the "Ace" groups. The Con holdings consist of 1,250 acres in a solid block bordering on the south shore of Beaverlodge lake, and the west shore of Lodge Bay, on Lake Athabaska. The Ace group comprises 1,200 acres in a single block adjoining Eldorado's Ace mine on the north shore of Beaverlodge Lake. On the Con group, channel sampling of surface rock trenches indicates the presence of three oreshoots, according to a report to the shareholders by President J.J. Byrne. These have a combined sampled length of 79-feet, averaging $144.10 per ton across a minable width of 2.0 feet. As to the Ace group: Channel sampling of surface trenches there shows the presence of uranium oxide in commercial quantities in several sections, including $18.48 across a width of 14.2-feet; $102.50 across 19.1-feet; $59.31 across 4.4-feet; and $76.22 across 1.7-feet. Calculations are based upon an 80% recovery.

CEYLON- Ceylon's entire output of thorium, the metal of importance in nuclear work, will now go to Great Britain. The plant for processing the thorium-bearing monazite sands arrived from the United Kingdom some time ago and is now being installed at Katukurunda, 30 miles south of Colombo on the west coast of the island, where monazite sands are found in abundance. The plant, which is the first of its kind in the Dominion, is nearing completion, and is expected to go into production by the end of this month. This plant has been loaned by Britain, and in return Ceylon will sell all her thorium to Britain. According to Dr. D. N. Wadia, former Ceylon government mineralogist, comparative tests have shown Ceylon monazite to have the richest thorium content among the world's known deposits. The beach at Induruwa, near Katukurunda, contains the most concentrated deposits. Another deposit has been discovered at Kodremalai, 40 miles south of Mannar. Other deposits have been found at the mouths of the Ginganga and Kaluganga rivers, and at Marawila and Welaboda, all on the west coast of the island.

RADIOISOTOPES...industrial applications...

Radioactive materials are being used in special tires by rubber researchers conducting tests to determine tread wear, according to the B. F. Goodrich Co. The new method, states William L. Davidson, director of physical research at the company's research center, has the advantage of giving instantaneous data and enabling the evaluation of such factors as the type of road surface and temperature, speed, tire pressure, and transmission of power on tread wear. There are no completely satisfactory laboratory tests for determining tire tread wear, according to Dr. Davidson, and the usual method consists of conducting actual road tests by large fleets of automobiles and trucks. These are costly and time consuming, he pointed out, since a tire must be run at least 5,000 miles to observe measurable wear. Radioactive phosphorous was obtained by Goodrich from Oak Ridge, and mixed into the compound for the top layer of the tread material for the special tires. Davidson obtained his wear data by using a portable Geiger counter to scan the track made by the radioactive tire. In addition, a sheet metal scoop was mounted behind the tire, and two inches above the road, to measure the amount of rubber blown into the air. Using a paper filter to entrap the minute rubber particles, their radioactivity was later measured in the Goodrich laboratories.

ATOMIC PATENT DIGEST...latest U. S. grants and applications...

Process for obtaining a massive body of ductile vanadium. Comprises forming a reaction mixture consisting of vanadium pentoxide, from 0.05 mol to 0.4 mol of iodine per mol of vanadium pentoxide, and at least 40% more metallic calcium than is stoichiometrically needed to react with said vanadium pentoxide and iodine, charging this reaction mixture to a bomb, heating the bomb to the reaction temperature, and then, after the reaction is over, separating the massive body of ductile vanadium obtained from the slag produced in the reaction. U. S. Pat. No. 2,561,526, issued July 24th, 1951; assigned to United States of America (USAEC).

Preparation of uranium bromide. U. S. Pat. No. 2,562,122, issued July 24th, 1951; assigned to United States of America (USAEC).

Electrical contact for electrolytic cells. A method of improving the resistance to penetration of fluorine gas and electrolyte between the contact surfaces of a metallic conductor and a carbon anode of an electrolytic cell for the production of elemental fluorine from an electrolyte comprising hydrogen fluoride and an alkali metal fluoride, which comprises introducing finely divided carbon in an aqueous vehicle between these surfaces and evaporating the water from them. U. S. Pat. No. 2,562,150, issued July 24th, 1951; assigned to United States of America (USAEC).

Vacuum distillation. A fractional distillation apparatus, comprising a vertical tubular member having a uniform cross section, condensing means centrally positioned within said tubular member, and distributed over the major portion of the length of said tubular member, means within said tubular member for moving condensate from said condensing means in a direction having a component radially and upwards to the inner surface of said tubular member, at several axially spaced positions, and for distributing it on this inner surface, and means for heating the tubular member to a temperature sufficient to at least partially re-evaporate the condensate. U. S. Pat. No. 2,562,153, issued July 24th, 1951; assigned to United States of America (USAEC).

Production of xylene hexafluoride. An improvement in the method of producing xylene hexafluoride and hydrogen chloride by the reaction of hydrogen fluoride upon xylene hexachloride in an autoclave under attained pressurea of at least 1,000 lbs/sq. in. U. S. Pat. No. 2,562,159; assigned to United States of America (USAEC).

Electrical scaling circuit. In combination with a current source that developes pulses, a plurality of scaling stages connected in cascade, the triggering voltage pulses applied to these stages being controlled by the output of the source. U.S. Pat. No. 2,562,645; issued July 31st, 1951; assigned to United States of America (USAEC).

Position indicating control apparatus. Comprises a probe target for a particle accelerator adapted to be moved to a selected position and to indicate its arrival there, with associated apparatus. U.S. Pat. No. 2,562,637, issued July 31st, 1951; assigned to United States of America (USAEC).

NEW BOOKS & OTHER PUBLICATIONS...in the nuclear field...

Radioactivity Applied to Chemistry. Edited by Arthur C. Wahl and Norman A. Bonner. The principles and ideas involved in the application of radioactivity to chemistry, with emphasis on the possibilities and limitations of such research; includes nearly 200 pages of the tables necessary to apply the principles. 604 pages.--John Wiley and Sons, Inc., New York 16. ($7.50)

After the A Bomb? Edited by Charles F. Behrens, Bureau of Medicine and Surgery, USN. Handling medical problems of atomic warfare encountered by the civilian. Includes: Care of trauma from atomic bomb explosion; treatment of radiation injuries in mass casualties; rescue and management of people in disasters; etc. 191 pages.--Thomas Nelson & Sons, New York 17. ($2.50)

Fundamentals of Atomic Physics, by Saul Dushman. A basic text. 294 pages. McGraw-Hill Book Co., New York 18. ($5.50)

Handbook of Emergency Defense Activities. Organization outlines and officials of 31 emergency defense agencies; includes U. S. Atomic Energy Commission.--Superintendent of Documents, Washington 25, D. C. (25¢)

AN INTERIM REPORT ON ATOMIC ENERGY WORK IN THE U. S. From the 10th Semi-Annual report of the United States Atomic Energy Commission-July, 1951

The major concern of the USAEC continues to be the manufacture and stockpiling of atomic weapon parts and assemblies. More weapons parts fabricators were contracting to the USAEC; with the increase in output of fissionable materials, atomic weapons output correspondingly increased, since such materials are the limiting factor in atomic weapon output.

Progress is marked in the vast atomic complex which supports this prime function: raw material supplies increased; reactor development pushed ahead; and research in the physical, medical and biological sciences was increasingly subsidized. Radioisotope output continued its gains. There were, however, difficulties encountered in meeting housing needs at new projects, manpower shortages, and shortages of materials.

RAW MATERIALS: To meet the expanding weapon production goals, additional supplies of uranium concentrate are being delivered. Not only are deliveries from Canada (Eldorado Mining and Refining, Ltd., as supplier), and the Belgian Congo (major output of Union Miniere du Haut Katanga), continuing at scheeduled rates, but domestic production has so increased that the U.S. is now second among the free nations of the world in the mining and processing of uranium ores. Research to reduce costs and increase efficiency of ore processing methods is being continued by the USAEC. Unit costs of production of plutonium and uranium-235 have also been lowered.

REACTOR DEVELOPMENT: Progress is being made in this program in design and construction, experiments with new types of reactors, and long-range studies for future development. New reactors under development include the experimental breeders designed to test whether or not atomic fuel can be manufactured more rapidly than it is consumed; a reactor to test the behavior of materials under heavy radiation; and a prototype of a submarine reactor. Progress was also made in constructing a pilot model reactor of the homogenous type designed to operate on a fuel mixed with moderating material in a liquid. Associated projects include power production; private production of reactor materials; safe management of wastes from reactors; chemical plants and laboratories; and training in reactor engineering.

PHYSICAL, MEDICAL, & BIOLOGICAL RESEARCH: Applied research, most of which is done in USAEC laboratories, is being expanded to give broad general coverage of such fields as domestic uranium geology, uranium chemistry, isotope separation methods, and measurement of neutron cross-sections of elements and their isotopes (useful in designing production and power reactors). For the research programs, construction of a new heavy-water research reactor was initiated at Argonne National Laboratory. Three new particle accelerators have also gone into operation in the past 6 months: the 86-inch cyclotron at Oak Ridge, the world's largest; a 60-inch cyclotron at Brookhaven; and a synchrocyclotron at the University of Chicago. During the past year, the USAEC invested approximately $28 million in biological and medical research, including $8 million for laboratory facilities. Major projects include development of means to combat the harmful effects of radiation, to utilize the beneficial effects of radiation for medical purposes, and to provide technical data for civil defense planning.

ISOTOPE PROGRAM: Since this program started in August 1946, more than 23,000 shipments have been made, including 1,000 to foreign users, and 4,000 to USAEC installations. Recent developments include the adoption of simplified procedures for domestic and foreign users of radioisotopes; a register of available compounds, and where they may be obtained; and a stockpile of isotope-labeled compounds not available commercially and difficult to synthesize (i.e., folic acid, vitamins, thiouracil and hormones). Other developments include an irradiation service for experimenters; production of radioisotopes at Brookhaven National Laboratory; expansion of the number of stable isotopes available; and handling of requests for British-made radioisotopes.

Sincerely,

The Staff,
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